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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/863,904	05/24/2001	Jacques Marchand	15200-1US JA/IC	9355
20988	7590	01/06/2005		
OGILVY RENAULT 1981 MCGILL COLLEGE AVENUE SUITE 1600 MONTREAL, QC H3A2Y3 CANADA			EXAMINER BRODA, SAMUEL	
			ART UNIT 2123	PAPER NUMBER

DATE MAILED: 01/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N . 09/863,904	Applicant(s) MARCHAND ET AL.	
	Examiner Samuel Broda	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/13/03</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Claims 1-20 have been examined.

Information Disclosure Statement

2. The Information Disclosure Statement Under 37 C.F.R. 1.56 dated 13 February 2003 was considered; it is noted that page 1 of the IDS contains no entries.

Drawings

- #. Applicants' formal drawings received on 14 February 2003 have been reviewed and approved.

Claim Rejections - 35 U.S.C. § 112, Second Paragraph

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5.1 Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a

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gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the connection between the first step of “determining a first concentration for each said at least two ions and an electrical potential profile using a transport algorithm” and the remaining steps; the remaining steps do not appear to make use of either the first concentration or the electrical potential profile.

5.2 Dependent claims not specifically described above are rejected using the same analysis.

Claim Rejections - 35 U.S.C. § 101

6. The following is a quotation of 35 U.S.C. 101:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6.1 Method claims 1-20 are rejected for reciting a process that is not directed to the technological arts.

Regarding claim 1, this claim is directed at a method for determining an ion concentration. To be statutory, the utility of an invention must be within the technological arts. *In re Musgrave*, 167 USPQ 280, 289-90 (CCPA, 1970). The definition of “technology” is the “application of science and engineering to the development of machines and procedures in order

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to enhance or improve human conditions, or at least to improve human efficiency in some respect.” (Computer Dictionary 384 (Microsoft Press, 2d ed. 1994)).

The limitations recited in claim 1 contain no language suggesting that claim 1 is intended to be within the technological arts ; please note that the method steps of claim 1 recited as part of a “computer-implemented method” would be considered as directed to the technological arts.

6.2 Claim 19 is rejected using the same analysis; all claims dependent on either claim 1 or claim 19 are rejected using the same analysis.

Claim Rejections - 35 U.S.C. § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the date of invention thereof by the applicant for patent.

7.1 Claim 19 is rejected under 35 U.S.C. 102(a) as being anticipated by Truc et al, “Numerical Simulation of Multi-Species Transport Through Saturated Concrete During a Migration Test --- MsDiff Code,” Cement and Concrete Research, Vol. 30 No. 10, pp. 1581-1592 (October 2000).

7.2 Regarding claim 19, Truc et al teaches a method for determining a diffusion coefficient for each of at least two ions capable of undergoing transport in a cement-based material, said cement-based material having a solid skeleton and pores, said pores being at least

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one of liquid-filled and vapor-filled, a porosity of said cement-based material being provided, the method comprising the steps of:

determining a concentration for each said at least two ions and an electrical potential profile using a transport algorithm, wherein the transport algorithm is a function of a diffusion of said at least two ions, of an electrical coupling between said at least two ions and a chemical activity of each said at least two ions [concentration determined by solution of equations (18)-(20), page 1584, based on flux of each ionic species, equation (5), page 1582]; and

determining a diffusion coefficient for each of at least two ions using said concentration and said electrical potential profile [diffusion coefficient for each ionic species D_{ei} calculated in equation (19)].

Therefore, Truc et al anticipates claim 19.

Allowable Subject Matter

8. Claims 1-18 and 20 would be allowable if rewritten to overcome the rejection(s) under both 35 U.S.C. 101 and 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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Conclusion

9. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure. Reference to Henriksen et al, U. S. Patent 6,398,945 is cited as teaching a method of treating corrosion in reinforced concrete by providing a uniform surface potential.

Reference to Bennett, U. S. Patent 6,217,742 is cited as teaching a cathodic protection system for reinforced concrete.

Reference to Li et al, "Finite Element Modelling of Chloride Removal from Concrete by an Electrochemical Method," Corrosion Science, Vol. 42 No. 12, pp. 2145-2165 (September 2000), is cited as teaching a finite element model to predict the transport of ions in concrete.

10. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Samuel Broda, whose telephone number is (571) 272-3709. The Examiner can normally be reached on Mondays through Fridays from 8:00 AM – 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska, can be reached at (571) 272-3716. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (571) 272-2100.



**SAMUEL BRODA, ESQ.
PRIMARY EXAMINER**